

WHAT IS CLAIMED IS:

1. A mobile computing device:
an antenna adapted to be oriented toward the
user;
a first microphone positioned on the antenna and
adapted to convert audible speech from the
user into speech signals; and
a speech sensor outputting a sensor signal
indicative of whether the user is speaking.
2. The mobile computing device of claim 1, wherein
the speech sensor outputs the sensor signal based on a
non-audio input generated by speech action of the
user.
3. The mobile computing device of claim 2, wherein
the speech sensor senses an image indicative of
movement of the user's mouth.
4. The mobile computing device of claim 2, wherein
the speech sensor is positioned on the antenna.
5. The mobile computing device of claim 2, wherein
the speech sensor is positioned on a housing of the
mobile computing device.
6. The mobile computing device of claim 2, and
further comprising a speech detector component
outputting a speech detection signal indicative of
whether the user is speaking based on the sensor
signal.

7. The mobile computing device of claim 6, wherein the first microphone is enabled or disabled as a function of the speech detection signal.

8. The mobile computing device of claim 6, and further comprising a speech recognition component coupled to the first microphone and adapted to perform speech recognition algorithms on the speech signals to generate speech recognition data.

9. The mobile computing device of claim 8, and further comprising an analog-to-digital converter coupling the first microphone to the speech recognition component and digitizing the speech signals, the analog-to-digital converter providing the digitized speech signals to the speech recognition component, and the speech recognition component performing the speech recognition algorithms on the digitized speech signals to generate the speech recognition data.

10. The mobile computing device of claim 9, wherein the speech recognition component is enabled or disabled as a function of the speech detection signal.

11. The mobile computing device of claim 6, wherein the speech detector component outputs the speech detection signal based on a first characteristic of the sensor signal and based on the speech signals from the first microphone.

12. The mobile computing device of claim 11, wherein the first characteristic of the sensor signal has a first level when the user is speaking and a second level when the user is not speaking and wherein the speech detector component outputs the speech detection signal based on a level of the first characteristic of the sensor signal relative to a baseline level of the first characteristic that comprises a predetermined one of the first and second levels of the characteristic.

13. The mobile computing device of claim 12, wherein the baseline level is calculated based on a level of the first characteristic over a time period.

14. The mobile computing device of claim 13, wherein the baseline level is calculated by averaging the level of the first characteristic over the time period.

15. The mobile computing device of claim 13, wherein the baseline level is recalculated intermittently during operation of the speech detection system.

16. The mobile computing device of claim 15, wherein the baseline level is recalculated periodically to represent the level of the first characteristic over a revolving time window.

17. The mobile computing device of claim 15, wherein the speech detection component outputs the speech detection signal based on a comparison of the level of the first characteristic of the sensor signal to the baseline level, and wherein the comparison is performed periodically.

18. The mobile computing device of claim 2, and further comprising a housing, wherein the antenna is rotatably coupled to a housing, and wherein the first microphone is positioned on a distal end of the antenna.

19. The mobile computing device of claim 18, further comprising a display connected to the housing, and wherein for a particular orientation of the mobile computing device to achieve a particular viewing angle and separation distance of the display relative to the user, the antenna is rotatable to a position which minimizes a distance between the first microphone and the mouth of the user.

20. A method of performing speech recognition, the method comprising:

- providing a mobile computing device;
- rotating an antenna of the mobile computing device toward the user such that a first microphone positioned at a distal end of the antenna is directed toward the mouth of the user;
- converting audible speech from the user into speech signals using the first microphone positioned at the distal end of the antenna;

digitizing the speech signals;
providing a sensor signal based on a non-audio
input generated by speech action of the user
and indicative of whether the user is
speaking; and
performing speech recognition algorithms on the
digitized speech signals using a
microprocessor positioned within the mobile
computing device to generate speech
recognition data if the sensor signal is
indicative of the user speaking.

21. The method of claim 20, wherein the step of rotating the antenna toward the user further comprises rotating the antenna from a first position to a second position which minimizes a distance between the first microphone and the mouth of the user for a particular separation distance of the mobile device relative to the user.

22. The method of claim 21, wherein the step of rotating the antenna toward the user further comprises rotating the antenna to the second position which minimizes the distance between the first microphone and the mouth of the user for a particular combination of separation distance and viewing angle of the mobile device relative to the user.

23. The method of claim 22, and further comprising outputting a speech detection signal indicative of whether the user is speaking based on the sensor signal.

24. The method of claim 20, wherein providing the sensor signal based on the non-audio input generated by speech action of the user and indicative of whether the user is speaking further comprises generating a facial movement sensor output indicative of facial movement of the user.